

LAND DEVELOPMENT AND SUBDIVISION INFRASTRUCTURE GUIDE

GENERAL

1. Acceptance of alternative solutions will be at the discretion of the Council. The form of alternative solutions should be discussed with Council at an early stage of design.
2. The consent holder shall compile photographic record demonstrating compliance with the conditions of this document.

The photographic record shall be held in digital form(s) and can be requested by the Council prior to s224 release.

3. All works shall be generally designed, constructed, installed, and commissioned in accordance with the Wairarapa Combined District Plan 2019 and New Zealand Standard NZS4404:2010 Land Development and Subdivision Infrastructure.
4. The conditions of a resource consent and requirements outlined in this document take precedence when it is at variance with any other codes and standards cited within this document.
5. Any departures from the above standards must require the written permission of the Council.
6. The consent holder shall appoint a 'consent holder's professional advisor' or 'independent qualified person' (IQP) as defined in NZS4404:2010 unless agreed otherwise with the Council. The Council may only waive this condition if the experience and demonstrated skill in quality management of the person undertaking the construction is acceptable to the Council.
7. The consent holder shall provide the Council written notification of Contracts and phases of construction in accordance with Section 1.8.5 of NZS4404:2010. If the consent holder fails to meet this requirement, the Council may instruct the consent holder to stop works immediately until the notification and necessary inspections are carried out.
8. In the event of any ambiguity or contradictions, it shall be the consent holder's responsibility to bring any ambiguity or contradictions to the Council's notice for explanation or supplementary instructions.
9. Compliance with the resource consent conditions and the above standards shall be the minimum requirement necessary for acceptance of works. The documents listed refer to the latest issue complete with amendments that are current at the date of this resource consent
10. The consent holder shall provide Council relevant design and construction documentation including drawings, specifications, and calculations in accordance with Section 1.8 NZS4404:2010 prior to construction.

11. The consent holder shall prepare and submit project specific Inspection and Test Plans (ITP) for individual packages of work for the Council's review and acceptance prior to construction. The consent holder shall use the ITP to demonstrate the adequacy of the approach taken in constructing a stage or stages of the construction works in accordance with the design, specification, and referenced regional, national, or international standards. The ITP shall include a combination of hold points, on-site inspections, sampling and testing, and regular laboratory testing.

To release any hold points in the ITP, the works compliance must be signed off as complete to a satisfactory standard by a person authorised in agreement with the Council to do so.

The results of all inspection, sampling, testing, verification and certification on physical works, all communications, reports, and files on the quality of the works, shall be held in digital form(s) and can be requested by the Council at any point over the duration of the resource consent.

12. The cost of any testing (and re-tests if required in the case of failure) must be incurred by the consent holder.
13. Unless otherwise approved by the Council, the consent holder shall ensure that sampling included in the ITP is undertaken by personnel certified competent by an IANZ accredited laboratory authorised to do so and signed off by a Laboratory Signatory. This includes samples obtained from suppliers for the purposes of pre-approval compliance testing, including quarries.
14. On completion of all subdivision and land development infrastructure, the consent holder shall provide evidence that all testing required by this resource consent and Standards cited within this document and that the test results comply with the minimum requirements.
15. The consent holder shall take all practicable steps to minimise sediment loading due to the works, by ensuring all stormwater and water discharged from the construction activities is directed to an appropriate erosion and sediment control measure or device prior to discharge.
16. Under no circumstances will disposal of sediment laden water to the wastewater or stormwater system be acceptable. The Contractor shall ensure that dewatering activities do not cause any downstream flooding of property, footpaths, or roadways.
17. In the road reserve, all work and activities must comply with the requirements of the National Code of Practice for Utility Operators' Access to Transport Corridors (NCOPUATTC).

INFRASTRUCTURE

1. Trench foundation for water, wastewater and stormwater pipes shall be checked for stability of the soil.

A plate compactor shall be run over the trench foundation as an initial activity to bind the surface and identify any obvious weak spots. The in-situ pipe trench foundation shall be tested with a Scala penetrometer at 10m intervals along the full pipe alignment and must return a result of minimum 4 blows per 50 mm of penetration. Where this cannot be achieved, alternative requirements for the site-specific ground conditions must be proposed and presented to the Council for approval. The results from the Scala penetrometer shall be recorded and provided to the Council.

2. Reuse of excavated/in-situ soil material for pipe embedment shall not be permitted unless agreed with the Council.
3. The material, placement and compaction of pipe embedment shall achieve the mechanical properties required under AS/NZS 3725 and AS/NZS 2566. Graded embedment shall be compacted achieve a minimum of 95% MDD of a lab based Proctor test over the full depth of the layer. For graded embedment material, testing compaction for each layer shall be carried out using a Nuclear Densometer or an approved equivalent which can demonstrate that the required dry density levels have been met.
4. Compaction testing should be executed and recorded at 10m intervals for the full embedment depth, along the full pipeline alignment.
5. The material, placement, compaction and testing of trench backfill shall comply with NCOPUATTC¹.
6. The consent holder shall only use Council approved contractors for new water and wastewater pipe connections into the Council's reticulated network.
7. The consent holder shall submit an application to connect to the Council's existing water, wastewater, and stormwater infrastructure. The application form can be found on the Council's website. No connections shall be made unless an approval is issued by the Council.

Engineering Approval for subdivision works does not imply approval for connection to Council's existing water, wastewater, and stormwater infrastructure.

8. The consent holder shall arrange for Council to inspect the connection upon completion to ensure it meets council standards. It is the responsibility of the consent holder to commission the contractor (at agreed terms) to carry out the connection.

¹ National Code of Practice for Utility Operators' Access to Transport Corridors

9. The minimum qualification required for working on Carterton District Council's water, stormwater and wastewater network will be the "National Certificate in water Reticulation Service Person" OR the "National Certificate in Infrastructure Works (Infrastructure Pipelaying Technician) (Level 3)" and supervised under the direction of a registered drainlayer or person qualified to the New Zealand Certificate in Pipe Installations (Level 4).

In addition to the above qualifications, for water supply construction the following unit standards are also required:

- 24925 Prepare, install fittings, and charge up a pipeline and check for leaks and operation
- 27330 Install a thrust, anti-scour, and anchor block.

Qualified staff must be on Site for the installation of all water services.

If it is found that the personnel working on the water network are not appropriately qualified, experienced, and skilled, then the Council may instruct the consent holder to replace the relevant staff member with suitably qualified and experienced personnel.

10. For welding any polyethylene pipe, the consent holder shall submit a welding methodology or a work method statement (WMS) for acceptance in writing by the Council. Welding of PE pipes shall follow the requirements of PIPA POP001 and PIPA POP003.
11. For use of polyethylene (PE) pipes in pressure applications, a quality assurance testing regime is required for all welding of PE pipes equal to and greater than 63 OD. The applicant or its representative shall prepare and submit a testing plan for weld testing of PE pipes for the Council's review and acceptance. The testing plan, as a minimum, must include details on the following:
- Quality assurance and control procedures for welding and handling of pipes.
 - Welders' certificates, with accreditation including certification under the existing New Zealand ITO framework, or certification under the proposed PIPA NZ qualification framework.
 - Sample sizing and methodology
 - Weld tests on sample welds.
 - Inspection of all welds and beads for compliance.

The consent holder must submit the results of all weld tests to the Council prior to s224 release.

12. The consent holder shall make arrangements for supply of water, electricity, or any other services as required for the construction of the works.

All temporary installations shall be removed on completion of the works.

Water from an existing hydrant shall not be permitted unless approved by the Council. Water from pipes connected to the Council's existing water reticulation shall be metered and fitted with a backflow preventor.

13. The consent holder shall arrange for all underground services, within and adjacent to the construction site to be located to ensure existing underground utility structures are not damaged during the course of the work and carry out the works in a manner that protects the separation requirements of other Utility Operators as provided for in relevant codes and regulations.
14. The consent holder shall follow the instructions of the respective Utility Operators when excavating near the existing services. These instructions may include that a representative of the authority is on Site i.e., stand over while excavations are undertaken.
15. Any stand over costs associated with the works shall be incurred by the consent holder.
16. The consent holder shall follow the instructions given in the following WorkSafe NZ publications as a minimum requirement.
 - Excavation Safety Good Practice Guidelines
 - Guide for Safety with Underground Services
17. The consent holder shall incur all costs for repairing any damage caused to existing services.
18. In the road reserve, all work and activities must comply with the requirements of the National Code of Practice for Utility Operators' Access to Transport Corridors (NCOPUATTC).
19. On completion of all subdivision and land development infrastructure, the consent holder shall provide the Council with the relevant completion documentation in accordance with Section 1.8.10 of NZS 4404:2010.
20. The consent holder shall complete and provide the Council a completed asset attribute list for all water, wastewater and stormwater assets vested in Council. This list shall also include water and wastewater asset components installed between the Council reticulated network to the property boundary. An electronic copy of the asset attribute list can be requested from the Council at any time.

The Contractor shall use the text fields provided in the lookup for a description of an asset attribute.

21. As-built information presented must be vector data—point or line.

Each point asset must have an accurate pair of grid coordinates. Coordinates must be picked as per the schematics provided in the Council's asset attribute list. A unique number needs to be specified for every asset.

Pipes and conduits for assets including electrical and optic fibre must be depicted by lines drawn between the pits or nodes, depending on the type of line asset. A line or outline asset is any asset that is defined by more than one point e.g., a pipe or structure. Similar to the point inputs, a unique number needs to be specified for every asset.

22. As built information including the asset attribute list shall be emailed to As Built Requests at asbuilt@cdc.govt.nz in the following formats prior to s224 release

- PDF
- AutoCAD file format (dwg/dxf)
- Excel (xlsm) – for asset attribute list

The consent holder shall ensure that all as built information must be coordinated to New Zealand Transverse Mercator 2000 (NZTM2000) projection and referenced to New Zealand Geodetic Datum 2000 (NZGD2000). Height and elevation data shall be based on New Zealand Vertical Datum 2016 (NZVD 2016).

EARTHWORKS

General

1. The consent holder shall engage a geo-professional as defined in NZS4404:2010 to prepare a geotechnical assessment that evaluates suitability of natural ground for the foundation of building, roading and other structures.
2. The assessment works and reporting undertaken by the geo-professional shall be in accordance with Section 2.2.4 and Section 2.3 of NZS4404:2010.

ROADS

General

1. Private right of ways shall be designed to provide traffic calming measures to manage vehicle speeds to 30km/hr.
2. Vehicle crossing shall be provided if positions are known at the time of subdivision, otherwise deferred to building consent stage.
3. Where required as part of a designed stormwater system, sumps shall be located as follows:
 - With a maximum channel run of 90m;
 - At changes of gradients or direction in the channel (e.g., at an intersection where both channels fall towards the intersection and where superelevation is required);
 - Clear of vehicle crossings.
4. A double sump to minimise the risk of ponding shall be provided where there is a low point, and at the lowest point in sag vertical curves for all roads.
5. Sump outlets shall have a minimum internal diameter of 300mm. Sumps connecting to soak pits shall be fitted with a submerged / trapped outlet.

STORMWATER

General

1. The existing constructed or natural flow paths shall be retained as far as practical. Any alteration of the existing stormwater system shall result in no detrimental impacts to either upstream or downstream properties.
2. Secondary overland flow paths on private property shall be protected by registered easements in favour of the Council or by other encumbrances prohibiting earthworks, fences, and other structures, as appropriate.
3. Where a stormwater easement is required, the easement shall be a minimum 3 m wide or the outside diameter of the pipe plus 2 times the depth to invert, whichever is greater.
4. Council will require easements or covenants to be recorded on the property title if a planned secondary flow path intrudes to a lot within the development.
5. The secondary flow paths shall be clearly defined on the engineering drawings, and as built drawings.
6. Engineering drawings for approval shall clearly show locations of existing and proposed stormwater infrastructure and secondary flow paths.
7. Where a vehicle crossing or right of way entrance is to be constructed to cross a roadside drain or swale, a culvert crossing must be installed. The minimum internal diameter of a vehicle crossing culvert is to be the greater of;
 - a. 375mm
 - b. a diameter or width that is at least as wide as the roadside drain or swale at the point at which the culvert is installed.
8. Auckland Council guideline document GD2021/007 shall be used for guidance in the site suitability assessment, soakage testing and the design of soakage systems. Any soakage system proposed for the subdivision will be approved upon submission of results of a suitable soakage test and design. Suitable tests are outlined in Appendix A of GD2021/007.
9. Soakage systems shall be designed to accommodate the design storms as outlined in Section 4.3.5.1 from NZS4404:2010. Secondary flow path considerations are required when using a soakage device as a primary stormwater system.
10. Soakage devices may provide temporary storage, but it must drain within 24 hours of the end of the rainfall event. If the time to drain is greater than 24 hours, the soak pit sizing calculation shall be repeated by increasing the soak pit dimensions.
11. Soakage devices located in roads vested in Council shall not be located underneath sealed surfaces. Where a soakage device is required to be laid in private land, the device shall be placed in an easement in favour of the Council.

WASTEWATER

General

1. Backflow effects for wastewater pipes shall be considered in the design and incorporate backflow prevention if necessary.
2. The reuse of an existing lateral will not be permitted, unless the lateral (from the building to the public main) is free from cracks and other defects as verified with the use of CCTV and is made of a resilient pipe material such as PVC, concrete, or Polyethylene. The reuse of laterals made of earthenware or AC pipe will not be permitted, regardless of condition.
3. Abandoned or redundant wastewater laterals shall be exposed at the property boundary then cut and sealed (on both sides of the cut) using a concrete plug. Concrete plugs shall have a minimum length, which is the greater of 500mm or the pipe diameter and be watertight.
4. Inspection points shall be installed on all wastewater lateral connections. These shall be located within road reserve or easement as applicable and as close as practical to the property boundary.
5. Penetrations through a chamber or manhole wall shall be secured either with a concrete anchor block (or corbel) extending 1.5 x pipe diameters and puddle flange with rubber O ring and hydrophilic sealant strip to ensure water-tightness or a concrete anchor block extending 1.5 x pipe diameter with hydrophilic sealant strips to ensure water-tightness depending on the pipeline material, whichever is specified.
6. Hinged manhole covers shall be oriented such that the hinge is oriented towards oncoming traffic, where installed in the carriageway. Should the lid pop open under surcharge, the cover will present a 'ramp' to oncoming traffic as opposed to a raised edge.
7. Redundant manholes shall be treated by removing the top, breaking the walls down to 500mm below the finished ground surface and backfilling the void with compacted local or regional AP65 aggregate.
8. For lots serviced by a pressure wastewater system, Council will require the consent holder to record the presence of such a system on the property title and shall also outline the maintenance obligations of the future private owner(s).
9. PE100 pipe used for gravity drainage applications shall be:
 - a. Black in colour.
 - b. Minimum wall thickness equating to SDR17, which may require consideration of the installation methods and any anticipated pulling forces and shall be confirmed suitable or amended to a thicker wall by the designer.
10. For Manholes, Maintenance shaft, or cleaning eye/lamp hole, covers shall be designed to comply with a minimum load rating to AS 3996 Class D.
11. PE100 pipes for pressure applications shall be a minimum of 63 OD PE100 SDR11.

12. Any pipelines that are subject to pressure, such as pumped rising mains, shall be pressure tested to the same requirements as a water supply pipeline of an equivalent material and pressure class.
13. For low pressure air testing, air must be introduced using an air compressor. Under no circumstances, blowing air into the test section shall be accepted. One of the pipe end plugs (or bungs) shall be fitted with a valve and a pressure gauge for monitoring required test pressure.
14. Wastewater pumping stations to be vested to the Council will be considered only at the discretion of Council and only where in the opinion of the Council there are no practicable alternatives.

The Council shall be contacted prior to design, to establish any material or design conventions that have been established in addition to those outlined in this document.

WATER

General

1. Loops in the watermain network shall be used to avoid dead ends as far as practicable to minimise water age and prevent the deterioration of water quality.
2. The maximum length of a branch, single end fed reticulation main is
 - 135m for pipelines \leq DN100
 - 450m for pipeline $>$ DN100

Dispensation for this clause may be applied for on a case-by-case basis taking into consideration minimum firefighting pressures, allowable pipeline losses and minimum peak pressures.

3. Each residential dwelling on a lot, proposed, anticipated or otherwise, shall require a separate, single potable service connection from the public main up to and including the agreed point of supply.
4. The consent holder or its representative shall not conduct any flow and pressure tests on the public main without prior approval from the Council. Carterton District Council's representative must be present during these tests.
5. Any hydrant stand pipes used to conduct flow and pressure tests on the public must be approved by the Council and fitted with backflow prevention. Alternatively, the Council may provide a hydrant standpipe for temporary use.
6. Polyethylene pipes used for potable water shall be butt fusion or electrofusion welded. Mechanical compression fittings can be used pipes smaller than 63 OD.
7. Warning tape shall be placed 300 mm above all mains pipe and 100 mm above service pipes. The warning tape shall be:
 - Blue polyethylene or polypropylene
 - A minimum of 100 mm wide and
 - Detectable by either stainless steel wire or aluminium laminate.
6. Service valves (tobies/manifolds) for residential properties requiring a DN 20 service pipe or less shall be Acuflo DR Brass Manifold (20 mm NB) GM900 with dual-check valve fitted with a Sensus 640C/40MC water meter. The manifold shall be housed in a high density polyethylene manifold box. The lid must have blue "Water" coded insert to indicate NZ water compatibility.
7. Unless otherwise agreed with the Council, service valves (manifolds) shall be located outside vehicle crossing(s) to allow better access for operation and maintenance.
8. The reuse of an existing service connection or lateral pipeline will not be permitted, unless approved in writing by the Council.

9. Redundant service connections or laterals shall be disconnected at the junction on the Council's watermain.
10. All water connection and water shutdown requests must be submitted to Carterton District Council in writing minimum 5 working days prior to the planned activity.
11. All personnel carrying out shutdowns of the water supply must be undertaken by a Council approved Contractor under the supervision of a water qualified person on site with a minimum Level 4 Water Reticulation qualification and must follow the Water NZ "Good Practice Guide – Hygiene Practices to prevent Water Supply Contamination".
12. Planned interruptions to normal water supply services shall, where possible, not be carried out during peak demand periods. The peak periods are:
 - 6am to 9am on any day
 - 5pm to 9pm on any day and
 - 7am to 11am Saturday, Sunday, and public holidays.
13. Where possible, shutdown shall be planned such that it does not last longer than 4 hours.
14. The consent holder or its Contractor must not operate any public network valves without approval from the Council.
15. For pressure testing of water pipes, the specified test pressure, measured at the lowest point in the pipeline, shall be:
 - 1.25 x the working pressure of the pipeline with a minimum test pressure of 1,200 kPa for PN12 PVC pipe.
 - 1,700 kPa for PE100 SDR11 (PN16) pipe
 - 1,500 kPa for PE100 SDR 13.6 (PN12) pipe

16. In addition to the Water Supply Disinfection Specification in Appendix D – NZS 4404:2010, the following requirements shall also be met:

After the satisfactory completion of the sterilising process, the chlorine solution shall be flushed as per Section D3 in Appendix D – NZS 4404:2010 and replaced with potable water. The main shall be left to stand for at least 6 hours after replacing the chlorine solution with potable water.

A technician from an accredited water testing laboratory shall take samples over the full length of the pipe. A list of accredited water testing laboratories is available from Taumata Arowai.

If possible, two samples shall be taken over the first 100 m of the pipeline, and an additional sample from locations approximately every 100 m thereafter. A minimum of two samples is required for any pipeline.

The samples shall be tested for residual chlorine levels and E. coli. The pipeline shall be deemed acceptable for connection with the council water network if residual chlorine < 1 mg/L and E. coli < 1.

The lab results from bacteriological tests shall be submitted to the Council prior to connecting the new water pipeline to the existing water network.

The new main shall be put into service within 24 hours of receiving a successful bacteriological lab test.

If a pipeline fails the bacteriological tests, or if it is contaminated after testing, the pipeline shall be disinfected again, and bacteriological testing repeated prior to connecting the new water pipeline to the existing water network. The lab results from bacteriological tests shall be submitted to the Council prior to connecting the new water pipeline to the existing water network.

LANDSCAPE

General

1. Landscaping and planting proposed to be vested in Council shall be designed, constructed, installed, commissioned, and maintained in accordance with the New Zealand Standard NZS4404:2010 Land Development and Subdivision Infrastructure.
2. For any proposed landscape features, the consent holder shall prepare a landscaping plan in accordance with Section 7 of NZS4404:2010 and submit the plan to the Council for approval prior to construction.
3. The consent holder shall be responsible for the routine maintenance and replacement of the planting including dead wooding, weed control, mulching, replacing dead trees, shrubs, and plants and watering for a period of 12 months from the time of issue of S224 completion certificate
4. The consent holder shall consult with the Council prior to submission of any Landscaping plans to outline any special landscaping requirements.

NETWORK UTILITY SERVICES

General

1. The consent holder shall make all arrangement with the appropriate network utility operators for the supply, installation and connection of electric power and telecommunication to all proposed Lots.
2. The consent holder shall provide written and satisfactory evidence that all utility operators for the supply of power and telecommunication have been made and that the utility operator are prepared to reticulate the subdivision and that agreement on financial arrangements has been reached.